

CLAIMS

What is claimed is:

1. An apparatus for reproducing AV data using a markup document in an interactive mode, comprising:
 - a buffer which buffers the markup document; and
 - a buffer manager which manages the buffer to preload the markup document and outputs buffering state information of the buffer in response to a report signal.
2. The apparatus of claim 1 further comprising a content decoder which interprets the markup document and outputs the report signal, wherein the buffer manager informs the content decoder of the buffering state information of the buffer in response to the report signal.
3. The apparatus of claim 2, wherein the content decoder generates the report signal using an application program interface (API).
4. The apparatus of claim 3, wherein the API serves to notify the content decoder of whether preloading of the markup document succeeded or failed, or whether the markup document is still being loaded.
5. The apparatus of claim 4, wherein the API returns a value of 0 where the preloading of the markup document succeeded, returns a value of 1 where the preloading of the markup document failed, and returns a value of 2 where the markup document is still being loaded.
6. The apparatus of claim 2, wherein the content decoder generates the report signal using an API, which includes at least one of a file path and an attribute of the markup document as a parameter.
7. The apparatus of claim 2, wherein the content decoder generates the report signal using an [obj].isCached(URL, resType) API, where the URL is a parameter indicating a file path of the markup document and the resType is a parameter indicating an attribute of the markup document.
8. The apparatus of claim 2, wherein the buffer manager informs the content decoder of a buffering state of the markup document utilizing an API.

9. The apparatus of claim 1, further comprising a content decoder which interprets the markup document, wherein the buffer manager transfers the markup document from the buffer to the content decoder in response to a reproduce signal.

10. The apparatus of claim 1 further comprising a content decoder which interprets the markup document, wherein the content decoder outputs a release signal to the buffer manager indicating that the markup document therein brought from the buffer, in response to a reproduce signal, is not in use.

11. The apparatus of claim 10, wherein the content decoder outputs the release signal to the buffer manager in response to the markup document no longer being displayed in a screen of a display device.

12. The apparatus of claim 1 further comprising a content decoder which interprets the markup document, wherein the buffer manager deletes the markup document from the buffer in response to a discard signal output from the content decoder.

13. The apparatus of claim 12, wherein the content decoder generates the discard signal using a discard API.

14. The apparatus of claim 2, wherein the content decoder generates the report signal using a `progressNameOfFile` API to determine a file name of the markup document currently being preloaded.

15. The apparatus of claim 2, wherein the content decoder generates the report signal using a `progressLengthOfFile` API to determine how much of the markup document currently being preloaded has been preloaded.

16. The apparatus of claim 2, wherein the content decoder generates the report signal using a `remainLengthOfFile` API to determine out how much of the markup document currently being preloaded is yet to be preloaded.

17. The apparatus of claim 2, wherein the content decoder generates the report signal using a totalLoadingSize API to determine a total load of the markup document to be preloaded.

18. The apparatus of claim 2, wherein the content decoder generates the report signal using a remainLoadingSize API to determine how much of a total load of the markup document is yet to be preloaded.

19. An apparatus for controlling a buffer which buffers a markup document to reproduce AV data in an interactive mode, comprising a buffer manager which manages the buffer to preload the markup document and outputs information of the buffer including buffering information of the markup document, wherein the buffering information includes:

- information indicating that preloading of the markup document succeeded;
- information indicating that the preloading of the markup document failed; and
- information indicating that the preloading of the markup document is still be conducted.

20. The apparatus of claim 19, wherein the buffer manager outputs the information of the buffer using an application program interface.

21. The apparatus of claim 19, wherein the information of the buffer further includes information indicating whether a command to preload the markup document has been successfully received.

22. The apparatus of claim 19, wherein the information of the buffer further includes information indicating whether preloading of the markup document is completed.

23. An apparatus for recording and/or reproducing AV data using a markup document in an interactive mode, comprising:

- an AV buffer which buffers the AV data;
- an AV reproduction engine which decodes the AV data;
- an enhanced audio video (ENAV) buffer which preloads the markup document to reproduce the AV data in the interactive mode;
- an ENAV engine which identifies buffering state information of the markup document and decodes the markup document; and
- means for obtaining the markup document.

24. The apparatus of claim 23, wherein the apparatus uses a blocked I/O method in response to obtaining the markup document from a data storage medium and an unblocked I/O method in response to obtaining the markup document from a network.